Name:_____ Hour: _____ Date: _____

NOTES: Section 10.4 – Find Probabilities of Disjoint and Overlapping Events

Goals: #1 - I can distinguish between disjoint and overlapping events.

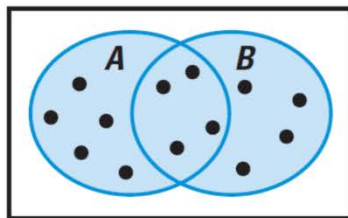#2 - I can find the probability of disjoint and overlapping events.

#3 - I can use the complement of A to find the probability of event A not occurring.
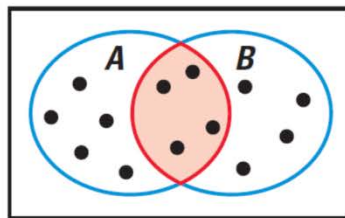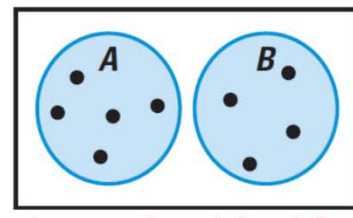
Homework: Lesson 10.4 Worksheet   😎   😬   😢

Notes:

When we consider all the outcomes for either of _____ events *A* and *B* you form the

_____ of *A* and *B*. When you consider only the outcomes _____

by both *A* and *B*, you form the _____ of *A* and *B*.

Union of *A* and *B*   Intersection of *A* and *B*   Intersection of *A* and *B* is empty.

Two events are _____ if they have one or more outcomes in common.

Two events are _____ or _____ if they have no

outcomes in common.

Probability of _____:

- If *A* and *B* are any two overlapping events, then the probability of *A* or *B* is:

- If *A* and *B* are disjoint events, then the probability of *A* or *B* is:

Example #1:

Find the indicated probability.

1. $P(A) = 0.28$, $P(B) = 0.64$
   $P(A \text{ or } B) = 0.71$
   $P(A \text{ and } B) = ?$

2. Events A and B are disjoint.
   $P(A) = 0.28$, $P(B) = 0.64$
   $P(A \text{ or } B) = ?$

Example #2:

You roll a six-sided dice.

1. What is the probability of rolling a 2 or a 5?

2. What is the probability of rolling an odd number or a number less than 3?

You practice:

A card is randomly selected form a standard deck of 52 cards.

1. What is the probability that it is a 10 or a face card?

2. What is the probability that it is a face card or a spade?

Example #3:

Out of 200 students in a senior class, 113 students are either varsity athletes or on the honor roll. There are 74 seniors who are varsity athletes and 51 seniors who are on the honor roll.

    1. What is the probability that a radomly selected senior is both a varsity athlete and on the honor roll?

Example #4:

Find the indicated probability. State whether A and B are disjoint or overlapping.

    1. $P(A) = \frac{1}{2}$

       $P(B) = \frac{1}{6}$

       $P(A \text{ or } B) = \frac{2}{3}$

       $P(A \text{ and } B) = ?$

    2. $P(A) = ?$

       $P(B) = 0.32$

       $P(A \text{ or } B) = 0.67$

       $P(A \text{ and } B) = 0.25$

Notes:

The _____ of an event A, consists of all outcomes that are _____ in A.

- The probability of the complement of A is:

Example #5:

Find $P(\bar{A})$

    1. $P(A) = 0.45$

    2. $P(A) = \frac{1}{4}$

Example #6:

When two six-sided dice are rolled, there are 36 possible outcomes.

1. Find the probability that the sum is not 4.

2. Find the probability that sum is greater than or equal to 3.

You practice:

When two six-sided dice are rolled, there are 36 possible outcomes.

1. Find the probability that the sum is 6 or 11.

2. Find the probability that the sum is greater than 7 and less than 11.

3. Find the probability that the sum is not 5.